Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ZAKARYAE FATHI, RICHARD S. GARARD
and JIANGHUA WEI

Appeal No. 1999-0729
Application No. 08/625,752

ON BRIEF

Before KIMLIN, KRATZ and PAWLIKOWSKI, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-3, 6, 14-18, 21, 22 and 25, all the claims remaining in the present application. Claim 1 is illustrative:

1. A method of bonding components comprising the steps of:

positioning an electrically conductive pattern on a first component surface;

applying a curable resin having adhesive properties to said first component surface, wherein said resin is in contacting relation with said conductive pattern;

positioning a second component surface in contacting relation with said resin; and

sweeping said resin and said conductive pattern with variable frequency microwaves selected from at least one window of microwave frequencies, said at least one window selected to avoid damage to said first and second components, said sweeping performed at a rate selected to uniformly heat said conductive pattern and cure said resin wherein said first and second components are bonded together along said pattern.

In the rejection of the appealed claims, the examiner relies upon the following references:

Gray et al. (Gray)	4,565,728	Jan. 21, 1986
Paulauskas et al. (Paulauskas)	5,603,795	Feb. 18, 1997
Bandaruk et al. (Bandaruk) (Australian patent specification)	263883	Oct. 17, 1963

Appellants' claimed invention is directed to a method of bonding components utilizing a curable resin which comprises sweeping the resin with variable frequency microwaves at a rate which uniformly heats the resin. According to page 13 of the present specification, "[t]he rate at which the different frequencies are launched is referred to as the sweeping rate" (lines 36 and 37). The specification states at page 14 that

"[t]he uniformity in processing afforded by frequency sweeping, provides flexibility in how groups of components to be bonded are oriented within the microwave furnace" (lines 4-7). In addition, the specification relates at page 11 that "[a]ppropriate use of variable frequency processing, as disclosed herein, enhances uniform processing from one group of components to be bonded to the next because placement of the components within the microwave furnace is not critical" (lines 15-19). The specification goes on to explain that "[b]y contrast, with single frequency microwave processing, each group of components to be bonded must be oriented precisely the same way to achieve identical processing time and quality" (page 11, lines 19-23).

Appealed claims 22, 25, 14-18 and 21 stand rejected under 35 U.S.C. § 102(e) or, in the alternative, under 35 U.S.C. § 103 as being unpatentable over Paulauskas. Claims 1-3, 6, 22, 25, 14-18 and 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Paulauskas in view of Bandaruk. Claim 18 stands rejected under 35 U.S.C. § 103 as being unpatentable over Paulauskas in view of Gray or further in view of Bandaruk.

Upon careful consideration of the opposing arguments presented on appeal, we will not sustain the examiner's rejections for essentially those reasons expressed by appellants in their Brief.

As emphasized by appellants, Paulauskas fails to teach or suggest the claimed step of exposing a curable resin to a sweeping with variable frequency microwaves. Appellants correctly point to the Paulauskas disclosure of determining the appropriate skin depth for the material that is exposed to microwave radiation, which determination is based upon a fixed frequency for the radiation. We agree with appellants' assessment that Paulauskas "teaches away from sweeping with variable frequency microwave energy because the skin depth of the interfacial material would necessarily change as different frequencies are applied" (page 8 of Brief, second paragraph). Also, since neither Bandaruk nor Gray discloses the use of microwave radiation, neither reference can remedy the stated basic deficiency of Paulauskas. While the examiner points attention to the disclosure at column 5, lines 8-12 of Paulauskas, which teaches that the microwave energy level and time of exposure are selected for suitable bonding, this does

not suggest the use of a sweeping exposure of variable microwave frequency.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)	
PETER F. KRATZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
BEVERLY PAWLIKOWSKI Administrative Patent Judge	)	

ECK:clm

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